

PRELIMINARY AMENDMENT

Attorney Docket No. Q67191

a direct-current power source 10. Excitation light emitted from the laser diode 1 is applied to a solid-state laser medium 2. Further, a wiring for measuring the voltage of the laser diode 1 is installed in the laser diode 1 and the voltage of the laser diode 1 is measured by a voltage measurement unit 12. The voltage measured by the voltage measurement unit 12 is transmitted to a fault determination unit 13, which is as an abnormality detection unit, to be compared with an upper limit value and a lower limit value that are set in advance. When being determined a fault, the fault determination unit 13 outputs a fault signal.

Page 18, please delete the paragraph bridging pages 17 and 18, and replace it with the following new paragraph:

Fig. 6 is a schematic diagram showing a structure of the fault determination unit when the voltage range for a determination of normality varies depending on an input current. The voltage at the laser diode 1 is changed depending on the current flow. At a fault determination unit 43 in Fig. 6, based on the value of the input current, the upper limit value V2 to be input to an upper voltage limit comparison unit 43a and the lower limit value V1 to be input to a lower voltage comparison unit 43b are changed by an upper limit value change operation unit 43c and a lower limit value change operation unit 43d, which are reference value change unit, respectively. In this case, the voltage range for the determination of normality is shown in Fig. 7.

IN THE CLAIMS:

Please enter the following amended claims:

1. (Amended) A solid-state laser diode comprising:
a laser diode for exciting a solid laser medium;
a constant current source for supplying a constant current to the laser diode;

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voltage measurement unit for measuring a voltage at both ends of the laser diode; and
abnormality detection unit for detecting an abnormality at the laser diode based on an
output of the voltage measurement means.

2. (Amended) A solid-state laser device comprising:
a plurality of laser diodes connected in series, for exciting a solid laser medium;
a constant current source for supplying a constant current to the laser diodes;
voltage measurement unit for measuring the voltage at both ends of the laser diodes; and
abnormality detection unit for detecting an abnormality at the laser diodes based on the
output of the voltage measurement unit.

3. (Amended) The solid-state laser device according to claim 2, wherein the
voltage measurement unit measures the voltage of the plurality of laser diodes individually to
output the individual measured voltage to the abnormality detection unit.

4. (Amended) The solid-state laser device according to claim 2, wherein when n
(n is a natural number equal to or greater than four) laser diodes are connected, the voltage
measurement unit measures the voltages of sets including m laser diodes (m is a natural number
smaller than n) individually to output the voltages to abnormality detection unit.

5. (Amended) The solid-state laser device according to claim 1, wherein a normal
range having a finite width defined an upper limit value and a lower limit value as reference
values of the voltage for determining abnormality of the laser diode is set; and

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when the voltages at the laser diodes measured by the voltage measurement unit are equal to or higher than the upper limit value or equal to or lower than the lower limit value, the abnormality detection unit outputs an abnormality detection signal.

6. (Amended) The solid-state laser device according to claim 5, further comprising:

reference value change unit for changing the normal range for the measured voltage set at the abnormality detection means on a basis of an input current value.

IN THE ABSTRACT OF DISCLOSURE:

The abstract is changed as follows:

According to the present invention, there is provided a solid-state laser diode comprising:

a laser diode for exciting a solid laser medium;
a constant current source for supplying a constant current to the laser diode;
voltage measurement unit for measuring a voltage at both ends of the laser diode; and
abnormality detection unit for detecting an abnormality at the laser diode based on an output of the voltage measurement unit. Whereby a photodiode need not be arranged on the periphery of the solid laser medium and the laser diode, and an abnormality at the laser diode can be detected without increasing the size of the device and complicating the device and without deteriorating the laser emission efficiency.